AGFA HEALTHCARE
HL7 Conformance Statement

Enterprise Imaging 8.0.x

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AGFA HealthCare

Document Information

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1 INTRODUCTION

1.1 Revision Record

Revision Number	Date	Reason for Change
1.0	August 17th 2015	Initial draft
1.1	September 10th 2015	Updates following review comments
1.2	September 11th 2015	Update version to 8.0.x and update table numbering

1.2 Purpose and Intended Audience of this Document

This document is a HL7 Conformance Statement for the HL7 Services of Enterprise Imaging 8.0.x – CSP centric deployment and VNA centric deployment. See in chapter 1.3 the components using HL7 interfaces involved in these deployments.

The user of this document is involved with system integration and/or software design. We assume that the reader is familiar with the terminology and concepts that are used in the HL7 standard and the IHE Technical Framework.

Readers not familiar with HL7 terminology should first read the appropriate parts of the HL7 standard itself, prior to reading this conformance statement.

Although the use of this conformance statement in conjunction with the HL7 standard is intended to facilitate communication with Enterprise Imaging 8.0.x, it is not sufficient to guarantee, by itself, the inter-operation of the connection between Enterprise Imaging 8.0.x and the 3rd party HL7-based system.

To help this integration validation we provide HL7 xml and pdf Conformance Profiles bundled together in a zip file “001515_Enterprise Imaging 8.0.x HL7 conformance profiles” on http://www.agfahealthcare.com/hl7. These conformance profiles are only related to the Core Server Platform component.

The integration of any device into a system of interconnected devices goes beyond the scope of the HL7 standard and this conformance statement when *interoperability* is desired. The responsibility for analyzing the applications requirements and developing a solution that integrates the Agfa equipment with other vendors’ systems is the user’s responsibility and should not be underestimated.

1.3 Enterprise Imaging 8.0.x Components – deployments overview

Enterprise Imaging 8.0.x is made of several components using HL7 communication. Depending on the deployment model adopted, all components are not required. Note that this Conformance statement applies to the CSP centric and VNA centric deployment models.

Here are the available deployment models with their corresponding components using HL7 communication and the link to their respective HL7 conformance statements and / or profiles.

1.3.1 CSP centric deployment

The following components using HL7 communication can be present in this deployment

- **Enterprise Imaging Core Server Platform (CSP)**

« 001515_Enterprise Imaging 8.0.x HL7 conformance profiles » on http://www.agfahealthcare.com/hl7

- **Enterprise Imaging CWP server**

  "001509_Enterprise Imaging CWP 8.0.x HL7 Conformance Statement" on http://www.agfahealthcare.com/hl7

Note:

CSP might also support trigger events that are not included in this conformance statement, provided that the message content can be converted to one of the supported trigger events. For example, CSP has limited support for SIU messages since some SIU trigger events can be converted to ORM trigger events (with potential loss of some SIU data which isn't supported in an ORM trigger event).
Another example is the limited support for patient linking since the A24 trigger event can be converted to an A40 trigger event.
This requires a thorough analysis by Agfa Healthcare Professional Services that ultimately determine whether or not CSP can support a non-listed trigger event.

1.3.2 VNA Standalone or XERO Standalone deployments

The following components using HL7 communication can be present in those deployments

- **Enterprise Imaging VNA**

  "001502"_Enterprise Imaging VNA 8.0.x HL7 conformance statement" on http://www.agfahealthcare.com/hl7

- **Enterprise Imaging CWP server**

  "001509_Enterprise Imaging CWP 8.0.x HL7 Conformance Statement" on http://www.agfahealthcare.com/hl7

1.3.3 VNA centric deployment

VNA centric deployment is composed of the following components using HL7 communication:

- **Orion Rhapsody** - HL7 Interface Engine used to
  - Receive, validate, map (if necessary) and distribute the HL7 inbound messages to the Enterprise Imaging components listed below.
  - Receive and distribute the HL7 outbound messages coming from the Enterprise Imaging components listed below
- **Enterprise Imaging Core Server Platform (CSP)** – used for the Identify, Verify and Store service
- **IMPAX Connectivity Manager** – used for the Verify service and HL7 to DICOM report conversion
- **Enterprise Imaging VNA** – used for the Store and Verify service
- **Enterprise Imaging CWP server**

1.4 Acronyms and Abbreviations

Definitions, terms and abbreviations used in this document, many of which are defined within the HL7 standard. Abbreviations and terms are as follows:

ADT	Admission, Discharge, and Transfer message
AIG	Appointment Information – General Resource segment
AIL	Appointment Information – Location Resource segment
AIS	Appointment Information – service segment
AIP	Appointment Information – Personal Resource segment
AL1	Patient Allergy Information segment
CSP	Core Server Platform
CWP	Consolidated Web Platform
DFT	Detail Financial Transaction message
DIS	Departmental Information System – generic name for systems that can contain ADT and/or Order Placer and/or Order Filler and/or report creator actors.
EVN	Event Type segment
HL7	Health Level 7
IHE	Integrating the Healthcare Enterprise
MFN	Master Files Notification message
MRG	Merge Patient Information segment
MSH	Message Header segment
NTE	Notes and comments segment
OBR	Observation Request segment
OBX	Observation/Result segment
OF	Order Filler – Device that sends filled orders (ORM)
OP	Order Placer
ORC	Common Order segment
ORM	Order Request Message
ORU	Observation Results - Unsolicited message
PID	Patient ID segment
PV1	Patient Visit segment
QRD	Query Definition segment
RGS	Resource Froup segment
RIS	Radiology Information System
SCH	Scheduling Activity Information segment
SIU	Scheduling Information Unsolicited message

1.5 Related Documents

- HL7 Standard , see www.hl7.org
- IHE Radiology Technical Framework Revision 13.0 – Final Text, July, 2014 – see http://www.ihe.net/Technical_Frameworks/ for the latest revisions

2 INBOUND MESSAGES

2.1 Core Server Platform (CSP)

2.1.1 Supported Trigger Events

2.1.1.1 Supported ACK Events

For more information about the processed segments and segment mappings, refer to the document specified in the 'Conformance profile document' column.

Table 2-1 Supported ACK Events

Func Area	Event Code	ACK Trigger Event Description	Conformance profile document
ACK	ALL	General ACK Message	ENTERPRISE IMAGING INBOUND ACK.pdf

2.1.1.2 Supported ADT Events

For more information about the processed segments and segment mappings, refer to the document specified in the 'Conformance profile document' column.

Note for VNA centric deployment: Unsupported ADT Events are filtered out by Rhapsody.

Table 2-2 Supported ADT Events

Func Area	Event Code	ADT Trigger Event Description	Conformance profile document
ADT	A01	Admit / Visit notification	ENTERPRISE IMAGING INBOUND ADT_A01.pdf
ADT	A02	Transfer a patient	ENTERPRISE IMAGING INBOUND ADT_A02.pdf
ADT	A03	Discharge / End visit	ENTERPRISE IMAGING INBOUND ADT_A03.pdf
ADT	A04	Register a patient	ENTERPRISE IMAGING INBOUND ADT_A04.pdf
ADT	A05	Pre-admit a patient	ENTERPRISE IMAGING INBOUND ADT_A05.pdf
ADT	A06	Change an outpatient to an inpatient	ENTERPRISE IMAGING INBOUND ADT_A06.pdf
ADT	A07	Change an inpatient to an outpatient	ENTERPRISE IMAGING INBOUND ADT_A07.pdf
ADT	A08	Update patient information	ENTERPRISE IMAGING INBOUND ADT_A08.pdf
ADT	A11	Cancel admit/visit notification	ENTERPRISE IMAGING INBOUND ADT_A11.pdf
ADT	A12	Cancel transfer	ENTERPRISE IMAGING INBOUND ADT_A12.pdf
ADT	A13	Cancel discharge/end visit	ENTERPRISE IMAGING INBOUND ADT_A13.pdf
ADT	A28	Add person information	ENTERPRISE IMAGING INBOUND ADT_A28.pdf
ADT	A38	Cancel pre-admit	ENTERPRISE IMAGING INBOUND ADT_A38.pdf
ADT	A40	Merge patient - patient identifier list	ENTERPRISE IMAGING INBOUND ADT_A40.pdf

2.1.1.2.1 Important fields in ADT segments

The ADT segments and associated fields supported by Enterprise Imaging Workflow are described in the conformance profiles documents. The purpose of this chapter is to emphasize the importance of certain fields:

- Enterprise Imaging Workflow expects to receive the Patient ID in PID-3.1 and the assigning Authority in PID-3.4

2.1.1.3 Supported MFN Events

For more information about the processed segments and other details, refer to the document specified in the 'Conformance profile document' column.

Note for VNA centric deployment: By default the MFN events are filtered out by Rhapsody

Table 2-3 Supported MFN Events

Func Area	Event Code	MFN Trigger Event Description	Conformance profile document
MFN	M02	Staff/Practitioner master file	ENTERPRISE IMAGING INBOUND MFN_M02.pdf

2.1.1.4 Supported ORM Events

For more information about the processed segments and other details, refer to the document specified in the 'Conformance profile document' column.

Table 2-4 Supported ORM Events

Func Area	Event Code	ORM Trigger Event Description	Conformance profile document
ORM	O01	Order message	ENTERPRISE IMAGING INBOUND ORM_O01

2.1.1.4.1 Important fields in ORM segments

The ORM segments and associated fields supported by Core Server Platform are described in the conformance profiles documents. The purpose of this chapter is to emphasize the importance of certain fields when Core Server Platform receives an ORM O01 from an external Ordering system:

- Patient ID in PID-3.1 and the Assigning Authority in PID-3.4.
- Ordering department code and name (Matching the pre-defined departments in Core Server Platform) in ORC-17.1 and ORC-17.2.
- Order Filler number in OBR-3.1.
- Exam code and exam name (matching the pre-defined exams in Core Server Platform) in OBR-4.1 and OBR-4.2.
    - If OBR-4.3 is filled in, CSP will use it as "performing department".
- Accession Number / Requested Procedure ID / Scheduled Procedure Step ID in OBR-18 / OBR-19 / OBR-20.
- If the ORM is related to an exam / acquisition modality for which CSP is the DICOM Modality Worklist provider, the proper population of the following fields will automatically populate the DMWL for the modality linked to the specified acquisition room without further action of the user:
    - OBR-4.1 & OBR-4.2: Exam code and Exam name.

- OBR 27.4: SPS start date &time.
- OBR-34.5: Acquisition Room.

Sample ORM message:

Here is an example of ORM message received by CSP from an external Order Filler (IHE compliant). This is an order for which CSP will provide the DICOM Modality Worklist to the modality seating in the **DERMATOROOM1** in the dermatology department (code: **DERMATO**).
Exam_code^exam_name **11910^Venogram** are defined in CSP:

```
MSH|^~\&|OM_RAD_OF|IHE|ICIS1DC1Agility1|ICIS1|20140727211205||ORM^O01^ORM_O01|2014
0727211205|P|2.3.1||||||8859/1

PID|||2214^^^&1.3.6.1.4.1.21367.2015&ISO
^PI||Anseyving^Job^^^^^L|Aliee^^^^^^M|20030109072359|M|||Vingerling^^Goeree-
Overflakkee^^3241EB^NLD

PV1||O||||||Davies^Davies||||||||||||2215^^^&1.3.6.1.4.1.21367.2015&ISO
||||||||||||||||||||||||||||||V

ORC|NW|445^GAZELLE_OP|139^GAZELLE_OF^1.3.6.1.4.1.12559.11.1.2.2.10.3^ISO|446^GAZEL
LE_OP|SC||^^^20140727120000|||6101^DANKE^LOREN^P^^DR||6101^DANKE^LOREN^P^^DR|||||D
ERMATO^dermatology^

OBR|1|445^GAZELLE_OP|139^GAZELLE_OF^1.3.6.1.4.1.12559.11.1.2.2.10.3^ISO|11910^Veno
gram^DERMATO^911910^XRF:Venogram^99IHE|P||||||||||6101^DANKESCHON^LORENSKE^P^^DR|
|00112|OMRP109|OMSPS109||||RF|||^^^20140727120000|||WALK||||^^^DERMATOROOM1|||||||
|||11910^Venogram^IHE99

ZDS|1.3.6.1.4.1.12559.11.1.2.2.10.1.1109^OrderManager^Application^DICOM
```

2.1.1.5 Supported ORU Events

For more information about the processed segments and segment mappings, refer to the document specified in the 'Conformance profile document' column.

Table 2-5 Supported ORU Events

Func Area	Event Code	ORU Trigger Event Description	Conformance profile document
ORU	R01	Unsolicited transmission of an observation Message	AGILITY (R)IS INBOUND ORU_R01.pdf
ORU	R01	Unsolicited transmission of an observation Message	AGILITY (R)IS INBOUND ORU_R01_HEARTSTATION.pdf

2.1.1.6 Supported SIU Events (VNA centric deployment only)

Note: This chapter describes the supported SIU events in a VNA centric deployment only. For SIU support in CSP deployment, see the note in chapter 1.3.1

Inbound support for SIU messages is implemented by a mapper in Rhapsody which will convert the SIU messages into ORM O01 messages before sending them to CSP.

Events marked with an '*' are mapped by default in Rhapsody into ORM O01. Other events are filtered out but can also be added in the mapper to meet a site's needs.

Table 2-6 Supported SIU Events

Func Area	Event Code	SIU Trigger Event	Mapped to
SIU	S12'*'	Notification of new appointment booking	ORM^O01
SIU	S13	Notification of appointment rescheduling	ORM^O01 upon request
SIU	S14	Notification of appointment modification	ORM^O01 upon request
SIU	S15'*'	Notification of appointment cancellation	ORM^O01

The following segments are processed when Rhapsody receives an SIU message:

MSH
SCH
PID
PV1
{RGS
[AIS]
[AIL]
}

By default, the PID and PV1 segments of the SIU messages are copied without modification in the ORM O01 message. Some fields of the MSH, SCH, AIS and AIL segments are mapped into ORM O01 segments as described in the following sub-chapters. Only the mapped fields are described. Other SIU segments are not mapped.

2.1.1.6.1 SIU MSH segments mapping

Table 2-7 SIU MSH to ORM segments Mappings

SIU message – MSH segment			Mapped to ORM			
Seq	HL7 Field Name	Value	Seg	Seq	HL7 Field Name	Value
9	Message Type	Yes	MSH	9	Message Type	Yes
9.1	Code value	SIU	MSH	9.1	Code value	ORM
9.2	Trigger Event	S12	MSH	9.2	Trigger Event	O01
			ORC	1	Order Control	SC
			ORC	5	Order Status	SC
		S15	MSH	9.2	Trigger Event	O01
			ORC	1	Order Control	CA
			ORC	5	Order Status	CA
9.3	Message Structure	SIU_S12	MSH	9.3	Message Structure	ORM_O01

2.1.1.6.2 SIU SCH segments mapping

Table 2-8 SIU SCH to ORM segments Mappings

SIU message – SCH segment			Mapped to ORM			
Seq	HL7 Field Name	Value	Seg	Seq	HL7 Field Name	Value
2	Filler Appointment ID	Yes	ORC OBR	3	Filler Order Number	Yes
2.1	Entity Identifier	Yes	ORC OBR	3.1	Entity Identifier	<OF number>

SIU message – SCH segment			Mapped to ORM			
Seq	**HL7 Field Name**	**Value**	**Seg**	**Seq**	**HL7 Field Name**	**Value**
			OBR	18	Placer Field 1	<Accession number>
			OBR	19	Placer Field 2	<Req. Proc. ID>
			OBR	20	Filler Field 1	<SPS ID>
11	Appointment Timing Quantity	Yes	ORC	7	Quantity Timing	Yes
11.4	Start Date & time			7.4	Start Date & time	
11.5	End Date & time			7.5	End Date & time	
12	Placer Contact person	Yes	ORC	12	Ordering Provider	Yes
12.1	ID number			12.1	ID number	
12.2	Family name			12.2	Family name	
15	Placer Contact Location	Yes	ORC	17	Entering Organisation	
15.4	Facility	ID&name		17.1	ID	<ordering dpt code>
				17.2	Name	<ordering dpt name>
26	Placer Order Number	Yes	ORC	2	Placer Order Number	Yes
26.1	Entity Identifier			2.1	Entity Identifier	
26.2	Name space ID			2.2	Name space ID	

2.1.1.6.3 SIU AIS segments mapping

Table 2-9 SIU AIS to ORM segments Mappings

SIU message – AIS segment			Mapped to ORM			
Seq	**HL7 Field Name**	**Value**	**Seg**	**Seq**	**HL7 Field Name**	**Value**
3	Universal Service ID	Yes	OBR	4	Universal service ID	Yes
3.1	Identifier			4.1	Identifier	<Procedure Code>
3.2	text			4.2	Text	<Procedure Name>
4	Start Date & time	Yes	OBR	27	Quantity Timing	Yes
4.1	Date & time			27.4	Date & time	<SPS start date & time>

2.1.1.6.4 SIU AIL segments mapping

Table 2-10 SIU AIL to ORM segments Mappings

SIU message – AIL segment			Mapped to ORM			
Seq	**HL7 Field Name**	**Value**	**Seg**	**Seq**	**HL7 Field Name**	**Value**
3	Location Resource ID	Yes	OBR	4	Universal service ID	Yes
3.1	Point of Care			4.3	Name of coding system	<Performing dept code>
4	Location type	Yes		If Location type ID is **D** then Location resource is the “performing department code” mapped as above		
4.1	Identifier	**D**				
3	Location Resource ID	Yes	OBR	34	Technician	Yes
3.2	Room			34.5	Room	<Acquisition room code>
4	Location type	Yes		If Location type ID is **E** then Location resource is the “Acquisition room code” mapped as above		
4.1	Identifier	**E**				

2.1.1.6.5 Important fields in SIU segments

- The appointment ID in SCH-2.1 **must** be unique because it will be mapped as Accession number.
- Patient ID in PID-3.1 and the Assigning Authority in PID-3.4.
- Exam code and exam name (already pre-defined in CSP) in AIS-3.1 and AIS-3.2.
- Departments:

  - Ordering department code in SCH-15.4.1.

  - Performing department code in: AIL-3.1 (If AIL-4.1 = D).
- Acquisition Room code in AIL-3.2 (if AIL-4.1=E).

2.1.1.6.5.1 Sample SIU S12 mapped to ORM O01

Sample SIU^S12 message: (Field that will be mapped to other segments in ORM are in blue)

```
MSH|^~\&|QDOC|HL7V1.1|QDOC|QDOC|20130410110227||SIU^S12^SIU_S12|00002362|P|2.3.1||||||885
9/1|

SCH|APLACERID09^SCHEDULING|AFILLERID09^SCHEDULING|1|||NW|||||^^^20143007110227^2014300712
0227^R|POLLEORDERINGPHYS|||^^^SIUDEP01&SIUDEP01NAME|QUADRAT||||QUADRAT|||||BOOKED|OPLACER
09^

PID|||2230^^^&1.3.6.1.4.1.21367.2015&ISO^PI||DeMaree^Cayleigh^^^^^L| Haag^^^^^^M|
20030923023652|F|||Fazantlaan^^Noordwijkerhout^^2211KV^NLD|||||||2229&1.3.6.1.4.1.21367.2
015&ISO PV1||O||||||DARROW^BARBARA^P^^DR||||||||||2231^^^&1.3.6.1.4.1.21367.2015&ISO
||||||||||||||||||||||||20140730102700|||||||V

RGS|1

AIS|1||EXSIU01CODE^EXSIU01NAME^|20140730110227

AIL|1||SIUDEP01|D

AIL|2||^SIUROOM01|E

AIP|1
```

Resulting ORM after mapping of a SIU^S12 message:
Fields mapped from SIU are in blue. Unchanged segments / fields from SIU are in black

```
MSH|^~\&|QDOC|HL7V1.1|QDOC|QDOC|20130410110227||ORM^O01^ORM_O01|00002362|P|2.3.1||||||885
9/1|

PID|||2230^^^&1.3.6.1.4.1.21367.2015&ISO^PI||DeMaree^Cayleigh^^^^^L|Haag^^^^^^M|
20030923023652|F|||Fazantlaan^^Noordwijkerhout^^2211KV^NLD|||||||2229^^^&1.3.6.1.4.1.2136
7.2015&ISO

PV1||O||||||DARROW^BARBARA^P^^DR||||||||||2231^^^&1.3.6.1.4.1.21367.2015&ISO
||||||||||||||||||||||||20140730102700|||||||V

ORC|SC|OPLACER09|AFILLERID09^SCHEDULING||SC||^^^20143007110227^20143007120227^R|||||POLLE
ORDERINGPHYS|||||SIUDEP01^SIUDEP01NAME


OBR|1|OPLACER09|AFILLERID09^SCHEDULING|EXSIU01CODE^EXSIU01NAME^SIUDEP01||||||||||||AFIL
LERID09|AFILLERID09|AFILLERID09|||||||^^^20140730110227|||||||^^^^SIUROOM01
```

2.1.1.6.5.2 Sample SIU S15 mapped to ORM O01

The mappings are exactly the same as for SIU S12. The only difference is the ORM O01 ORC-1 and ORC-5 that will be CA instead of SC.

Sample SIU^S15 message: (Field that will be mapped to other segments in ORM are in blue)

```
MSH|^~\&|QDOC|HL7V1.1|QDOC|QDOC|20130410110227||SIU^S15^SIU_S12|00002362|P|2.3.1||||||885
9/1|

SCH|APLACERID09^SCHEDULING|AFILLERID09^SCHEDULING|1|||NW|||||^^^20143007110227^2014300712
0227^R|POLLEORDERINGPHYS|||^^^SIUDEP01&SIUDEP01NAME|QUADRAT||||QUADRAT||||||OPLACER09^

PID|||2230^^^&1.3.6.1.4.1.21367.2015&ISO ^PI||DeMaree^Cayleigh^^^^^L|Haag^^^^^^M|
20030923023652|F|||Fazantlaan^^Noordwijkerhout^^2211KV^NLD|||||||2229^^^&1.3.6.1.4.1.2136
7.2015&ISO PV1||O||||||DARROW^BARBARA^P^^DR||||||||||2231^^^&1.3.6.1.4.1.21367.2015&ISO
|||||||||||||||||||||||||20140730102700|||||||V

RGS|1

AIS|1||EXSIU01CODE^EXSIU01NAME^|20140730110227

AIL|1||SIUDEP01|D

AIL|2||^SIUROOM01|E

AIP|1
```

Resulting ORM after mapping of a SIU^S12 message:
Fields mapped from SIU are in blue. Unchanged segments / fields from SIU are in black

```
MSH|^~\&|QDOC|HL7V1.1|QDOC|QDOC|20130410110227||ORM^O01^ORM_O01|00002362|P|2.3.1||||||885
9/1|

PID|||2230^^^&1.3.6.1.4.1.21367.2015&ISO ^PI||DeMaree^Cayleigh^^^^^L|Haag^^^^^^M|
20030923023652|F|||Fazantlaan^^Noordwijkerhout^^2211KV^NLD|||||||2229^^^&1.3.6.1.4.1.2136
7.2015&ISO

PV1||O||||||DARROW^BARBARA^P^^DR||||||||||2231^^^&1.3.6.1.4.1.21367.2015&ISO
|||||||||||||||||||||||||20140730102700|||||||V

ORC|CA|OPLACER09|AFILLERID09^SCHEDULING||CA||^^^20143007110227^20143007120227^R|||||POLLE
ORDERINGPHYS|||||SIUDEP01^SIUDEP01NAME


OBR|1|OPLACER09|AFILLERID09^SCHEDULING|EXSIU01CODE^EXSIU01NAME^SIUDEP01||||||||||||||AFIL
LERID09|AFILLERID09|AFILLERID09|||||||^^^20140730110227|||||||^^^^SIUROOM01
```

2.2 Connectivity Manager (VNA centric deployment only)

2.2.1 Supported Trigger Events

2.2.1.1 Supported ADT Events

Inbound support for ADT triggers is implemented by a lookup table. This table may be edited to meet a site's needs.

Events marked with an '*' are configured by default in Rhapsody.

Table 2-11 Supported ADT Events

Func Area	Event Code	ADT Trigger Event	Inbound Supported	MCF message_type
ADT	A01	Admit a patient	Y	PATIENT_ADMITTED
ADT	A02	Transfer a patient	Y	PATIENT_TRANSFERRED
ADT	A03	Discharge a patient	Y	PATIENT_DISCHARGED
ADT	A04	Register a patient	Y	PATIENT_ADMITTED
ADT	A05	Preadmit a patient	Y	VISIT_SCHEDULED (IHE)
ADT	A06	Transfer an outpatient to inpatient	Y	PATIENT_TRANSFERRED
ADT	A07	Transfer an inpatient to outpatient	Y	PATIENT_TRANSFERRED
ADT	A08	Update patient information	Y	PATIENT_UPDATED
ADT	A10	Patient arriving	Y	PATIENT_ARRIVED (IHE)
ADT	A11	Cancel admit	Y	VISIT_DELETED
ADT	A12	Cancel transfer	Y	PATIENT_TRANSFERRED
ADT	A13	Cancel discharge	Y	PATIENT_ADMITTED
ADT	A28	Add person information	Y	PATIENT_UPDATED
ADT	A38	Cancel pre-admit	Y	VISIT_DELETED
ADT	A40'*'	Merge patient – internal ID	Y	PATIENT_MERGED

2.2.1.1.1 ADT Segments Processed

The following segments are processed when Connectivity Manager receives an ADT message:

MSH
[EVN]
PID
PV1
[AL1]
[MRG]
[OBR]*

* OBR is not a segment of HL7 ADT messages, however some fields in the OBR are mapped to attributes in the MCF patient object, which is a part of all ADT and ORM processing.

2.2.1.2 Supported ORM Events

The ORM^O01 is the only code supported for order messages.

Table 2-12 Supported ORM Events

Func Area	Event Code	ORM Trigger Event	Inbound Supported	MCF message_type
ORM	O01	General order message	Y	Refer to 2.2.1.2.1

2.2.1.2.1 MCF message_type for ORM Messages

For ORM messages the message_type for the resulting MCF message is determined by a combination of ORC-1.1 and ORC-5.1. If ORC1.1 is set to “SC” for “Status Changed”, then ORC-5.1 is used as the key to determine both the order status and the message type for the resulting MCF message. Otherwise ORC-1.1 is used as the key. The following tables indicate what message type values are selected by the key values from ORC-1.1 and ORC-5.1. The tables also show the values selected for order_status, study_status_id and scheduled_procedure_step_status.

Table 2-13 message_type from ORC-1.1

Key Value	Message Type	Order Status	Study Status	Scheduled Procedure Step Status
NW	STUDY_SCHEDULED	SCHEDULED	SCHEDULED	SCHEDULED
XO	STUDY_UPDATED	STUDY_UPDATED	STUDY_UPDATED	STUDY_UPDATED
CA	STUDY_CANCELLED	CANCELLED	CANCELLED	CANCELLED
OC	STUDY_CANCELLED	CANCELLED	CANCELLED	CANCELLED
DC	STUDY_CANCELLED	CANCELLED	CANCELLED	CANCELLED
OD	STUDY_CANCELLED	CANCELLED	CANCELLED	CANCELLED
SC	Refer to Table 2-14, otherwise defaults to STUDY_UPDATED	Refer to Table 2-14, defaults to an empty value	Refer to Table 2-14, defaults to an empty value	Refer to Table 2-14, defaults to an empty value

Table 2-14 message_type from ORC-5.1

Key Value	Message Type	Order Status	Study Status	Scheduled Procedure Step Status
DC	STUDY_CANCELLED	CANCELLED	CANCELLED	CANCELLED
CM	STUDY_COMPLETED	COMPLETED	COMPLETED	COMPLETED
IP	STUDY_STARTED	STARTED	STARTED	ARRIVED
CA	STUDY_CANCELLED	CANCELLED	CANCELLED	CANCELLED
PA	No mapping	No mapping	ARRIVED	SCHEDULED

2.2.1.2.2 ORM Segments Processed

The following segments are processed when Connectivity Manager receives an ORM message:

MSH
PID
PV1
[AL1]
ORC
OBR

2.2.1.3 Supported ORU Events

The ORU^R01 is the only code supported for observation messages.

Table 2-15 Supported ORU Events

Func Area	Event Code	ORU Trigger Event	Inbound Supported	MCF message_type
ORU	R01	Unsolicited transmission of an observation message	Y	REPORT_CREATED

2.2.1.3.1 ORU Segments Processed

The following segments are processed when Connectivity Mananger receives an ORU message:

```
MSH
PID
[ PV1 ]
{
  [ ORC ]
  OBR
    {
    [ OBX ]
  }
}
```

The Connectivity manager can convert plain text report into DICOM basic text SR and encapsulated base64 PDF into DICOM encapsulated PDF.

The ORU report message is recommended to be sent to Connectivity Manager before the corresponding order is present in the Connectivity Manager (unless the ORU message contains a ZDS segment with the Study IUID) to make sure that the DICOM images and DICOM report are in the same study.

In most of the cases the order message (ORM) is sent before the report (ORU) to the Connectivity Manager. But for various reasons it could be that the ORM is delayed, so, there is a specific route in Rhapsody that holds the sending of the ORU report to the Connectivity Manager until it receives the ORM.

2.2.2 HL7 to MCF Mappings

The following sections describe the default mapping of data from an HL7 message to an MCF message.

2.2.2.1 MSH Segment Mappings

Table 2-16 MSH to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Field Separator	Yes		Usually "|"
2	Encoding Characters	Yes		Usually "^~\&"
3	Sending Application	No		
4	Sending Facility	No		
5	Receiving Application	No		

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
6	Receiving Facility	No		
7	Date/time of Message	No	patient_medical_module_sequence > data_collection_date	Date portion only (YYYYMMDD)
			patient_medical_module_sequence > data_collection_time	Time portion only (HHMMSS)
8	Security	No		
9	Message Type	Yes	hl7_event_type	ADT only, uses MSH 9,2 or EVN 1,1
			hl7_message_type	MSH 9,1
			message_type	Different for ADT, ORM, and ORU
			message_type_details	ADT only, uses MSH 9,2 or EVN 1,1
10	Message Control ID	Yes	message_control_id	Generated by sending application
11	Processing ID	Yes		
12	Version ID	Yes		“2.1”, “2.2”, “2.3”, “2.3.1”
13	Sequence Number	No		
14	Continuation Pointer	No		
15	Accept Acknowledgement Type	No		
16	Application Acknowledgement Type	No		
17	Country Code	No		
18	Character Set	No	patient_name_sequence > encoding_of_patient_name	If missing, will use character_encoding from configuration
19	Principal Language of Message	No		

2.2.2.2 PID Segment Mappings

Table 2-17 PID to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Set ID – Patient ID	No		
2	Patient ID	No	Not mapped	The PID and assigning authority must be sent in PID-3.1 and PID-3.4
			Not mapped	
			Not mapped	
3	Patient ID List	Yes	patient_id_sequence > patient_id	PID 3.1
			> issuer_of_patient_id	PID 3.4 or &1.3.6.1.4.1.21367.2015&ISO. &1.3.6.1.4.1.21367.2015&ISO must be replaced by the real assigning authority used in the hospital
			> use_of_patient_id	“PRIMARY”

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
		No	patient_id_sequence > patient_id	PID-3.1 of other occurrence (after the ~) are stripped out when the assigning autority is not the one defined for EI
			> issuer_of_patient_id	PID-3.4 of other occurrence (after the ~) are stripped out when the assigning autority is not the one defined for EI
			> use_of_patient_id	"GLOBAL"
4	Alternate Patient ID	No	patient_id_sequence > patient_id	PID 4,1
			> issuer_of_patient_id	PID 4,4 or default_assigning_authority
			> use_of_patient_id	"ALTERNATE"
5	Patient Name	Yes	patient_name_sequence > patient_name	PID-5.1 + PID-5.2 + PID-5.3
			> issuer_of_patient_name	default_assigning_authority
			> use_of_patient_name	"PRIMARY"
6	Mother's Maiden Name	No	mothers_maiden_name	
7	Date of Birth	No	patient_birth_date	Date portion only (YYYYMMDD)
			patient_birth_time	Time portion only (HHMMSS)
8	Sex	No	patient_sex	M (Male), F (Female), O (Other), U (Unknown)
9	Patient Alias	No	patient_name_sequence > patient_name	PID-9.1 + PID-9.2 + PID-9.3
			> issuer_of_patient_name	default_assigning_authority
			> use_of_patient_name	"ALTERNATE"
10	Race	No	race	Use PID 22 if absent
11	Patient Address	No	patient_address	
13	Phone Number – Home	No	patient_contact_sequence > contact	PID-13.1
			> type_of_contact	"HOME PHONE"
			> use_of_contact	"1"
14	Phone Number – Business	No	patient_contact_sequence > contact	PID-14.1
			> type_of_contact	"WORK PHONE"
			> use_of_contact	"2"
15	Primary Language	No		
16	Marital Status	No	marital_status	
17	Religion	No	patient_religious_preference	
18	Patient Account Number	No	patient_account_number	
19	SSN Number – Patient	No	patient_id_sequence > patient_id	PID-19.1
			> issuer_of_patient_id	"SSN"
			> use_of_patient_id	"ALTERNATE"
22	Ethnic Group	No	ethnic_group	Use if PID 10 is absent
23	Birth Place	No	birth_place	
24	Multiple Birth Indicator	No	multiple_birth_indicator	
25	Birth Order	No	birth_order	
28	Nationality	No	nationality	

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
29	Patient Death Date/Time	No	death_date death_time	
30	Patient Death Indicator	No	death_indicator	

2.2.2.3 PV1 Segment Mappings

Table 2-18 Inbound PV1 to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Set ID - Patient Visit	No		
2	Patient Class	Yes	patient_class	I (Inpatient), O (Outpatient), E (Emergency), P (Preadmit), R (Recurring), B (Obstetrics)
3	Assigned Patient Location	No	current_patient_location	Use PV1-11 if absent
4	Admission Type	No	admission_type	
5	Pre-admit Number	No	preadmit_number	
6	Prior Patient Location	No	prior_patient_location	
7	Attending Doctor (Refer to 2.2.2.3.1)	No	attending_physician_sequence > person_name	PV1-7.2 + PV1-7.3 + PV1-7.4
			> person_id_sequence >> person_id	PV1-7.1
			>> issuer_of_person_id	PV1-7.9 or default_assigning_authority
			>> use_of_person_id	“PRIMARY”
8	Referring Doctor (Refer to 2.2.2.3.1)	No	attending_physician_sequence > person_name	PV1-8.2 + PV1-8.3 + PV1-8.4
			> person_id_sequence >> person_id	PV1-8.1
			>> issuer_of_person_id	PV1-8.9 or default_assigning_authority
			>> use_of_person_id	“PRIMARY”
9	Consulting Doctor (Refer to 2.2.2.3.1)	No	consulting_physician_sequence > person_name	PV1 9,2 + PV1 9,3 + PV1 9,4
			> person_id_sequence >> person_id	PV1 9,1
			>> issuer_of_person_id	PV1 9,9 or default_assigning_authority
			>> use_of_person_id	“PRIMARY”
10	Hospital Service	No	hospital_service	
11	Temporary Location	No	current_patient_location	Used if PV1 3 is absent
13	Readmission Indicator	No	readmission_indicator	
14	Admit Source	No	admission_source	
15	Ambulatory Status	No	patient_medical_module_sequence > pregnancy_status	B6 present
16	VIP Indicator	No	vip_indicator	
17	Admitting Doctor (Refer to 2.2.2.3.1)	No	admitting_physician_sequence > person_name	PV1-17.2 + PV1-17.3 + PV1-17.4
			> person_id_sequence >> person_id	PV1-17.1

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
			>> issuer_of_person_id	PV1-17.9 or default_assigning_authority
			>> use_of_person_id	"PRIMARY"
19	Visit Number	Yes	admission_id	PV1-19.1 or PID-3.1
			issuer_of_admission_id	PV1-19.4 or default_assigning_authority
29	Transfer to Bad Debt Code	No	first_similar_illness_date first_similar_illness_time	
36	Discharge Disposition	No	discharge_disposition	
37	Discharged to Location	No	discharge_location	
39	Servicing Facility	No	institution_name	
42	Pending Location	No	pending_patient_location	
43	Prior Temporary Location	No	prior_temporary_patient_location	
44	Admit Date/Time	No	scheduled_admission_date admitting_date	Date portion only (YYYYMMDD)
			scheduled_admission_time admitting_time	Time portion only (HHMMSS)
45	Discharge Date/Time	No	discharge_date scheduled_discharge_date	Date portion only (YYYYMMDD)
			discharge_time scheduled_discharge_time	Time portion only (HHMMSS)

2.2.2.3.1 Physician Mappings

A physician mapping ideally will always have a name and an ID. This will correctly populate the mcf_person and mcf_person_id tables. New entries in each table are only created for new unique name and ID pairs.

If only a name is present, a new person table entry is always created and no entry is made in the mcf_person_id table. So for each ^Doe^John which shows up as a physician, you will get one new table entry.

If only an ID is present, the name is assumed to be blank. New entries are created for each unique ID. Each person_id has a reference to its own entry in the person table (which has a blank name).

This logic applies to all physician mappings in the PV1, ORC, and OBR segments.

2.2.2.4 AL1 Segment Mappings

Table 2-19 AL1 to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Set ID - AL1	Yes		Set to 1,2,3…
2	Allergy Type	No	patient_allergy_sequence > allergy_type	
3	Allergy Code/Description	Yes	patient_allergy_sequence > patient_allergy	AL1 3,2

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
4	Allergy Severity	No	patient_allergy_sequence > allergy_severity	
5	Allergy Reaction	No	patient_allergy_sequence > allergy_reaction	
6	Identification Date	No	patient_allergy_sequence > allergy_identification_date	

2.2.2.5 MRG Segment Mappings

This segment is only used in ADT Merge messages (A18, A30, A34, A40).

Table 2-20 MRG to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Prior Patient ID - Internal	Yes	referenced_merged_patient_sequence > patient_id_sequence >> patient_id	MRG-1.1
			>> issuer_of_patient_id	MRG-1.4 or &1.3.6.1.4.1.21367.2015&ISO. &1.3.6.1.4.1.21367.2015&ISO must be replaced by the real assigning authority used in the hospital
			>> use_of_patient_id	“PRIMARY”

2.2.2.6 ORC Segment Mappings

Table 2-21 ORC to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Order Control	Yes	message_type	Refer to 2.2.1.2.1
			order_status	
			study_status_id	
			scheduled_procedure_step_status	
2	Placer Order #	Yes	placer_order_number	For Enterprise Imaging 8.0.0 a special mapping is applied so that the Accession number (OBR-18) is primarily taken as order placer number. required(obr(18) or orc(2,1) or obr(2,1) or orh(9,1) or qrd(10) or sch(2,1), 'Placer order number must be mapped somehow from HL7')
			issuer_of_placer_order_number	default_assigning_authority

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
3	Filler Order #	Yes	filler_order_number	For Enterprise Imaging 8.0.0 a special mapping is applied so that the Accession number (OBR-18) is primarily taken as order filler number. required(obr(18) or orc(2,1) or obr(2,1) or orh(9,1) or qrd(10) or sch(2,1), 'An Order Filler number must be mapped somehow from HL7')
			issuer_of_filler_order_number	default_assigning_authority
4	Placer Group #	No	placer_group_number	ORC-4.1
			issuer_of_placer_group_number	default_assigning_authority
5	Order Status	Yes	message_type	Refer to 2.2.1.2.1
			order_status	
			study_status_id	
			scheduled_procedure_step_status	
6	Response Flag	No		
7	Quantity/Timing	No	quantity_timing	Use OBR-27 if absent
8	Parent	No	parent	
9	Date/Time of Transaction	No		
10	Entered By	No	order_entered_by	ORC-10.2 to 4 (name only)
11	Verified By	No		
12	Ordering Provider (Refer to 2.2.2.3.1)	No	ordering_provider_sequence > person_name	ORC-12.2 + ORC-12.3 + ORC-12.4
			> person_id_sequence >> person_id	ORC-12.1
			>> issuer_of_person_id	ORC-12.9 or default_assigning_authority
			>> use_of_person_id	“PRIMARY”
13	Enterer’s Location	No	order_entering_location	
14	Call Back Phone Number	No	placer_call_back_phone_number	ORC-14.1
15	Order Effective Date/Time	No	placer_order_effective_date	Date portion only (YYYYMMDD)
			placer_order_effective_time	Time portion only (HHMMSS)
16	Order Control Reason	No		
17	Entering Organization	Yes	requesting_service	ORC-17.1 is mandatory for Enterprise Imaging 8.0.0. It must be the department code. It is used to populate the Virtual AE (VAE) that will be sent out in the ORC-18.1 field to the VNA. So, CSP or 3rd party order filler must provide a value.
18	Entering Device	No		
19	Action By	No		

2.2.2.7 OBR Segment Mappings

Table 2-22 OBR to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Set ID - Observation Request	No		Set to 1,2,3…
2	Placer Order #	Yes	placer_order_number	For Enterprise Imaging 8.0.0 a special mapping is applied so that the Accession number (OBR-18) is primarily taken as order placer number. required(obr(18) or orc(2,1) or obr(2,1) or orh(9,1) or qrd(10) or sch(2,1), 'Placer order number must be mapped somehow from HL7')
			issuer_of_placer_order_number	default_assigning_authority
3	Filler Order #	Yes	filler_order_number	VNA_Verify device: This device receives the ORM verification messages from VNA which populates ORC-2 with the Accession Number required(obr(18) or orc(2,1) or obr(2,1) or orh(9,1) or qrd(10) or sch(2,1), 'An Order Filler number must be mapped somehow from HL7'
				Rhapsody_ORM device: This device receives the ORM messages coming from CSP and external DIS. required(obr(18) or orc(3,1) or obr(3,1) or orh(9,1) or qrd(10) or sch(2,1), 'An Order Filler number must be mapped somehow from HL7')
			issuer_of_filler_order_number	default_assigning_authority
4	Universal Service ID	Yes	placer_universal_service_id filler_universal_service_id	Components 1,2,3 of OBR-4 If OBR-4.2 is absent, use OBR-4.1
			service_request_description requested_procedure_description scheduled_procedure_step_description	OBR-4.2
			requested_procedure_code_sequence >referenced_requested_procedure_ code_sequence >>code_value	OBR-4.1
			>> code_meaning	OBR-4.2
			>> coding_scheme_designator	OBR-4.3
			>> code_type	“PROCEDURE”

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
			scheduled_action_item_code_sequence >referenced_scheduled_action_item_code_sequence >> code_value	OBR-4.1
			>> code_meaning	OBR-4.2
			>> coding_scheme_designator	OBR-4.3
			>> code_type	"ACTION_ITEM"
5	Priority	No	requested_procedure_priority	Used if OBR-27.6 is absent
6	Requested Date/Time	No	requested_date	Used if OBR-27.4 is absent. Date portion only (YYYYMMDD)
			requested_time	Used if OBR-27.4 is absent. Time portion only (HHMMSS)
7	Observation Date/Time	No		
8	Observation End Date/Time	No		
9	Collection Volume	No		
10	Collector Identifier	No		
11	Specimen Action Code	No		
12	Danger Code	No	patient_medical_module_sequence > patient_state	
13	Relevant Clinical Inf.	No	service_request_comments	
			patient_medical_module_sequence > medical_alerts_sequence >> medical_alerts	
14	Specimen Rec'd Date/Time	No		
15	Specimen Source	No		
16	Ordering Provider family (Refer to 2.2.2.3.1)	No	requesting_physician_sequence > person_name	Components 2,3,4 of OBR 16
			> person_id_sequence >> person_id	OBR-16.1
			>> issuer_of_person_id	OBR-16.9 or default_assigning_authority
			>> use_of_person_id	"PRIMARY"
17	Order Callback Phone No.	No		
18	Placer Field 1	YES	accession_number	required(obr(18) or orc(2,1) or obr(2,1) or orh(9,1) or qrd(10) or sch(2,1), 'An accession_number must be mapped somehow from HL7')
19	Placer Field 2	No	scheduled_procedure_step_location	Use if OBR 24 is absent
			scheduled_resource_sequence > resource_name	
			> resource_type	"SPECIALTY"
			IHE: requested_procedure_id	*IHE: OBR 19; if absent ORC 2,1; if absent OBR 2,1*
20	Filler Field 1	No	*IHE: scheduled_procedure_step_id*	*IHE: OBR-20; if absent ORC 3,1; if absent OBR 3,; if absent OBR-19*
21	Filler Field 2	No	*CD Burn: cd_burn_destination_resource*	*If ORC 5 is 'MV'*

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
22	Result Rpt/Status Change - Date/Time	No	study_date	OBR 22,1. Date portion only (YYYYMMDD).
			study_time	OBR 22,1. Time portion only (HHMMSS).
23	Charge To Practice	No		
24	Diagnostic Serv Sect Id	No	scheduled_procedure_step_location	Use OBR 19 if absent
			scheduled_resource_sequence > resource_name	
			> resource_type	"SPECIALTY"
25	Result Status	No	report_data_sequence > referenced_results_sequence >> interpretation_status_id	Use OBR 25,1 if OBX 11,1 is absent. TRANSCRIBED (R, P, C), APPROVED (F)
26	Parent Result	No		
27	Quantity/Timing	No	quantity_timing	Used if ORC 7 is absent
			requested_date	OBR 27,4 or OBR 6 if absent. Date portion only (YYYYMMDD)
			requested_time	OBR 27,4 or OBR 6 if absent. Time portion only (HHMMSS)
			requested_procedure_priority	OBR 27,6. STAT (S), HIGH (A, P, C, T), ROUTINE (R, PRN)
			study_priority_id	OBR 27,6. HIGH (S, A, P, C, T), MED (R), LOW (PRN)
			scheduled_procedure_step_start_date	OBR 27,4 or OBR 36 if absent. Date portion only (YYYYMMDD)
			scheduled_procedure_step_start_time	OBR 27,4 or OBR 36 if absent. Time portion only (HHMMSS)
			scheduled_procedure_step_end_date	OBR 27,5. Date portion only (YYYYMMDD)
			scheduled_procedure_step_end_time	OBR 27,5. Time portion only (HHMMSS)
28	Result Copies To	No		
29	Parent Number	No		
30	Transportation Mode	No	patient_transport_arrangements	
31	Reason For Study	No	reason_for_imaging_service_request reason_for_study reason_for_requested_procedure	OBR 31,1
32	Principal Result Interpreter	No	report_data_sequence > referenced_results_sequence >> interpretation_author_sequence >>> person_name >>interpretation_approver_sequence >>> person_name	Components 2,3,4 or OBR 32. If absent use ZOS 4
33	Assistant Result Interpreter	No		
34	Technician (Refer to 2.2.2.3.1)		scheduled_performing_physician_ sequence > person_name	Components 2,3,4 of OBR 34
			> person_id_sequence >> person_id	OBR-34.1

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
			>> issuer_of_person_id	OBR-34.9 or default_assigning_authority
			>> use_of_person_id	"PRIMARY"
			CD Burn: cd_burn_destination_resource	*If ORC 5 is 'MV'*
35	Transcriptionist	No	report_data_sequence > referenced_results_sequence >> interpretation_transcriber_sequence >>> person_name	OBR-35.1
			>> interpretation_transcription_date	OBR-35.2. Date portion only (YYYYMMDD)
			>> interpretation_transcription_date	OBR-35.2. Time portion only (HHMMSS)
36	Scheduled Date/Time	No	scheduled_procedure_step_start_date	Used if OBR-27.4 is absent. Date portion only (YYYYMMDD)
			scheduled_procedure_step_start_time	Used if OBR-27.4 is absent. Time portion only (HHMMSS)
37	Number of Sample Containers	No		
38	Transport Logistics of Collected Sample	No		
39	Collector's Comment	No		
40	Transport Arrangement Responsibility	No		
41	Transport Arranged	No		
42	Escort Required	No		
43	Planned Patient Transport Comment	No		

2.2.2.8 OBX Segment Mappings

Table 2-23 OBX to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Set ID – OBX	No		Set to 1,2,3…
2	Value Type	No		
3	Observation identifier	YES		If OBX-3.2 is "IMP" use OBX-5.1 for impressions. If OBX-3.2 is "GDT" use OBX-5.1 for interpretation_text. These MCF values gather across all of the OBX segments in a message. For Enterprise Imaging 8.0.0 , OBX-3.2 must be GDT to allow the CM to convert the report present in the ORU OBX-5.1 field into DICOM SR or PDF
4	Observation Sub-ID	No		

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
5	Observation Value	YES	report_data_sequence > referenced_results_sequence >> interpretation_text	Applies if OBX-3.2 equals "GDT". If absent, use ZIR 2 if ZIR 1 equals "BODY".
			report_data_sequence > referenced_results_sequence >> impressions	Applies if OBX-3.2 equals "IMP".
6	Units	No		
7	References Range	No		
8	Abnormal Flags	No		
9	Probability	No		
10	Nature of Abnormal Test	No		
11	Observation Result Status	No	report_data_sequence > referenced_results_sequence >> interpretation_status_id	OBX-11.1 or OBR-25.1 if absent. TRANSCRIBED (R, P, C), APPROVED (F)
12	Date Last Obs Normal Values	No		
13	User Defined Access Checks	No		
14	Date/Time of the Observation	No	report_data_sequence > referenced_results_sequence >> interpretation_recorded_date	OBX-14.1. Date portion only (YYYYMMDD)
			>> interpretation_recorded_date	OBX-14.1. Time portion only (HHMMSS)
15	Producer's ID	No		
16	Responsible Observer	No	report_data_sequence >referenced_results_sequence >>interpretation_recorder_sequence >>>person_name	OBX-16.1
17	Observation Method	No		

2.2.2.9 ZDS Segment Mappings

Table 2-24 ZDS to MCF Mappings

Seq	HL7 Field Name	Value Required	MCF Attribute(s)	Comments
1	Study Instance UID	YES		
1.1	Reference pointer	YES	Study_instance_uid	DICOM Study Instance UID (0020,000D)
1.2	Application ID	No		Not mapped
1.3	Type of data	No		Not mapped
1.4	Sub type	No		Not mapped

2.2.3 Acknowledgements

The HL7 mapping returns a **NAK** if the incoming message cannot be processed. If the reason is the message type is not mapped, the Acknowledgment Code is set to "**AR**". Any other parsing error returns an Acknowledgment Code of "**AE**".

2.3 VNA (VNA Centric deployment only)

2.3.1 Supported Trigger Events

2.3.1.1 Supported ADT Events

Inbound support for ADT triggers is implemented by a lookup table. This table may be edited to meet a site's needs.

Events marked with an '*' are configured by default in Rhapsody, and therefore will be transmitted to VNA. Other events will be filtered out.

Table 2-25 Supported ADT Events

Func Area	Event Code	ADT Trigger Event	Inbound Supported
ADT	A01'*'	Admit a patient	Y
ADT	A04'*'	Register a patient	Y
ADT	A05'*'	Preadmit a patient	Y
ADT	A08'*'	Update patient information	Y
ADT	A10	Patient arriving	Y
ADT	A23	Delete a Patient Record	Y
ADT	A28'*'	Add person information	Y
ADT	A31	Update person information	Y
ADT	A34	Merge patient information – patient ID only	Y
ADT	A40'*'	Merge patient – internal ID	Y
ADT	A47	Change internal ID	Y

2.3.1.1.1 ADT Segments Processed

The following segments are processed when VNA receives an ADT message:

MSH
[EVN]
PID
PV1
[MRG]

2.3.1.2 Supported ORM Events

The ORM^O01 is the only code supported for order messages.

Table 2-26 Supported ORM Events

Func Area	Event Code	ORM Trigger Event	Inbound Supported
ORM	O01	General order message	Y

2.3.1.2.1 ORM Messages : Supported Control Codes and Order Statuses

For ORM messages the processing performed is determined by a combination of ORC(1,1) and ORC(5,1). If ORC(1,1) is set to “SC” for “Status Changed”, then ORC(5,1) is used as the key to determine both the order status. Otherwise ORC(1,1) is used as the key. The following tables indicate what order control codes and order statuses are supported by default from ORC(1,1) and ORC(5,1). The set of supported control codes and the corresponding handling behaviour can be changed by configuration.

Table 2-27 Default Order Control Codes supported from ORC 1,1

Control Code (ORC-1) Value
NW
XO
CA
OC
DC
OD
SC

Table 2-28 Default Order Status Codes supported from ORC 5,1

Order Status (ORC-5) Value
DC
CM
IP
CA

2.3.1.2.2 ORM Segments Processed

The following segments are processed when VNA receives an ORM message:

```
MSH
PID
[ PV1 ]
{
  ORC
  [ OBR ]
  [
    { OBX }
  ]
}

ZDS
```

2.3.2 Supported HL7 Attributes

The following sections indicate the default mapping of HL7 attributes to internal VNA data attributes.

2.3.2.1 MSH Segment Mappings

Table 2-29 MSH Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
1	Field Separator	Yes	No	Usually "|"
2	Encoding Characters	Yes	No	Usually "^~\&"
3	Sending Application	Yes	No	
4	Sending Facility	Yes	No	
5	Receiving Application	Yes	No	
6	Receiving Facility	Yes	No	
7	Date/time of Message	No	No	Date portion only (YYYYMMDD)
8	Security	No	No	
9	Message Type	Yes	No	Extract the message type and event type components
10	Message Control ID	Yes	No	Generated by sending application
11	Processing ID	Yes	No	
12	Version ID	Yes	No	“2.1”, “2.2”, “2.3”, “2.3.1”, “2.5”
13	Sequence Number	No	No	
14	Continuation Pointer	No	No	
15	Accept Acknowledgement Type	No	No	
16	Application Acknowledgement Type	No	No	
17	Country Code	No	No	
18	Character Set	Yes	No	If missing, then set to ISO_IR 100
19	Principal Language of Message	No	No	

2.3.2.2 PID Segment Mappings

Table 2-30 PID Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
1	Set ID – Patient ID	No	No	
2	Patient ID (External ID)	No	No	
3	Patient ID (Internal ID)	Yes	Yes	Important to include Assigning Authority in PID-3.4
4	Alternate Patient ID	No	No	
5	Patient Name	Yes	Yes	Maps to DICOM Patient Name (0010,0010)
6	Mother’s Maiden Name	No	Yes	Maps to DICOM Patient’s Mother’s Birth Name (0010,1060)
7	Date of Birth	No	Yes	Maps to DICOM Patient’s Birth Date (0010,0030)
8	Sex	No	Yes	M (Male), F (Female), O (Other), U (Unknown)
9	Patient Alias	No	Yes	Only support one patient alias.
10	Race	No	No	
11	Patient Address	No	No	

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
12	Country Code	No	No	
13	Phone Number – Home	No	No	
14	Phone Number – Business	No	No	
15	Primary Language	No	No	
16	Marital Status	No	No	
17	Religion	No	No	
18	Patient Account Number	No	No	
19	SSN Number – Patient	No	Yes	Included as other patient ID
20	Driver's Lic Num – Patient	No	No	
21	Mother's Identifier	No	No	
22	Ethnic Group	No	No	
23	Birth Place	No	No	
24	Multiple Birth Indicator	No	No	
25	Birth Order	No	No	
26	Citizenship	No	No	
27	Veterans Military Status	No	No	
28	Nationality	No	No	
29	Patient Death Date/Time	No	No	
30	Patient Death Indicator	No	No	

2.3.2.3 PV1 Segment Mappings

Table 2-31 PV1 Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
1	Set ID - Patient Visit	No	No	
2	Patient Class	No	No	
3	Assigned Patient Location	No	No	
4	Admission Type	No	No	
5	Pre-admit Number	No	No	
6	Prior Patient Location	No	No	
7	Attending Doctor	No	No	
8	Referring Doctor	No	Yes	Maps to DICOM Referring Physician's Name (0008,0090) on ORM messages
9	Consulting Doctor	No	No	
10	Hospital Service	No	No	
11	Temporary Location	No	No	
12	Pre-admit Test Indicator	No	No	
13	Readmission Indicator	No	No	
14	Admit Source	No	No	
15	Ambulatory Status	No	Yes	Maps to DICOM Pregnancy Status (0010,21C0) on ORM messages. If the Ambulatory Status is set to B6, then the Pregnancy status is set to 3.
16	VIP Indicator	No	No	

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
17	Admitting Doctor	No	No	
18	Patient Type	No	No	
19	Visit Number	No	Yes	Maps to DICOM Admission ID (0038.0010) and Issuer of Admission ID (0038,0011)
20	Financial Class Eff. Date	No	No	
21	Charge Price Indicator	No	No	
22	Courtesy Code	No	No	
23	Credit Rating	No	No	
24	Contract Code	No	No	
25	Contract Effective Date	No	No	
26	Contract Amount	No	No	
27	Contract Period	No	No	
28	Interest Code	No	No	
29	Transfer to Bad Debt Code	No	No	
30	Transfer to Bad Debt Date	No	No	
31	Bad Debt Agency Code	No	No	
32	Bad Debt Transfer Amount	No	No	
33	Bad Debt Recovery Amt	No	No	
34	Delete Account Indicator	No	No	
35	Delete Account Date	No	No	
36	Discharge Disposition	No	No	
37	Discharged to Location	No	No	
38	Diet Type	No	No	
39	Servicing Facility	No	No	
40	Bed Status	No	No	
41	Account Status	No	No	
42	Pending Location	No	No	
43	Prior Temporary Location	No	No	
44	Admit Date/Time	No	No	
45	Discharge Date/Time	No	No	
46	Current Patient Balance	No	No	
47	Total Charges	No	No	
48	Total Adjustments	No	No	
49	Total Payments	No	No	
50	Alternate Visit ID	No	No	
51	Visit Indicator	No	No	
52	Other Healthcare Provider	No	No	

2.3.2.4 MRG Segment Mappings

This segment is only used in ADT Merge messages (A40, A47).

Table 2-32 MRG Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
1	Prior Patient ID - Internal	Yes	Yes	
2	Prior Alternate Patient ID	No	No	
3	Prior Patient Acct Number	No	No	
4	Prior Patient ID - External	No	No	
5	Prior Visit Number	No	No	
6	Prior Alternate Visit ID	No	No	
7	Prior Patient Name	No	Yes	

2.3.2.5 ORC Segment Mappings

Table 2-33 ORC Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNAA Attribute(s) (Yes/No)	Comments
1	Order Control	Yes	No	Refer to Table 2.24
2	Placer Order #	No	Yes	Important to include ORC 2,2 as the assigning authority
3	Filler Order #	No	Yes	Important to include ORC 3,2 as the assigning authority
4	Placer Group #	No	No	
5	Order Status	No	No	
6	Response Flag	No	No	
7	Quantity/Timing	No	Yes	ORC 7,4 maps to Scheduled Procedure Step Start Date and Time (0040,0002) and (0040,0003) ORC 7,6 maps to DICOM Requested Procedure Priority (0040,1003). The mapping is S – STAT A | P | C – HIGH R – ROUTINE T - MEDIUM
8	Parent	No	No	
9	Date/Time of Transaction	No	No	
10	Entered By	No	No	
11	Verified By	No	No	
12	Ordering Provider	No	No	
13	Enterer's Location	No	No	
14	Call Back Phone Number	No	No	
15	Order Effective Date/Time	No	No	
16	Order Control Reason	No	No	
17	Entering Organization	No	No	
18	Entering Device	No	No	ORC 18,1 maps to an internal attribute Original Source Identity (0043,1014). This value is mapped from ORC 17,1 Entering Organization by default
19	Action By	No	No	

2.3.2.6 OBR Segment Mappings

Table 2-34 OBR Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
1	Set ID - Observation Request	No	No	Set to 1,2,3…
2	Placer Order #	No	No	
3	Filler Order #	No	No	
4	Universal Service ID	No	Yes	OBR 4,4-6 maps to DICOM Scheduled Protocol Code Sequence (0040,0008) OBR 4,5 maps to DICOM Scheduled Procedure Step Description (0040,0007) Optional: OBR-4.1 to 4.3 maps to DICOM Procedure Code sequence (0008,1032) as follow: OBR-4.1: (0008,0100) code value OBR-4.2: (0008,0104) code meaning OBR-4.2: (0008,0102) Coding Scheme designator
5	Priority	No	No	
6	Requested Date/Time	No	No	
7	Observation Date/Time	No	No	
8	Observation End Date/Time	No	No	
9	Collection Volume	No	No	
10	Collector Identifier	No	No	
11	Specimen Action Code	No	No	
12	Danger Code	No	Yes	Maps to DICOM Patient State (0038,0500)
13	Relevant Clinical Inf.	No	Yes	Maps to DICOM Medical Alert (0010,2000)
14	Specimen Rec'd Date/Time	No	No	
15	Specimen Source	No	No	
16	Ordering Provider family	No	Yes	Maps to DICOM Requesting Physician (0032,1032)
17	Order Callback Phone No.	No	No	
18	Placer Field 1	No	Yes	Maps to DICOM Accession Number (0008,0050)
19	Placer Field 2	No	Yes	Maps to DICOM Requested Procedure ID (0040,1001)
20	Filler Field 1	No	Yes	Maps to DICOM Scheduled Procedure Step ID (0040,0009)
21	Filler Field 2	No	No	
22	Result Rpt/Status Change - Date/Time	No	No	
23	Charge To Practice	No	No	
24	Diagnostic Serv Sect Id	No	Yes	Maps to DICOM Modality (0008,0060)
25	Result Status	No	No	
26	Parent Result	No	No	
27	Quantity/Timing	No	No	

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
28	Result Copies To	No	No	
29	Parent Number	No	No	
30	Transportation Mode	No	Yes	Maps to DICOM Patient Transport Arrangement (0040,1004)
31	Reason For Study	No	No	
32	Principal Result Interpreter	No	No	
33	Assistant Result Interpreter	No	No	
34	Technician	No	Yes	Maps to DICOM Scheduled Performing Physician Name (0040,0006)
35	Transcriptionist	No	No	
36	Scheduled Date/Time	No	No	
37	Number of Sample Containers	No	No	
38	Transport Logistics of Collected Sample	No	No	
39	Collector's Comment	No	No	
40	Transport Arrangement Responsibility	No	No	
41	Transport Arranged	No	No	
42	Escort Required	No	No	
43	Planned Patient Transport Comment	No	No	
44	Procedure Code	No	Yes	OBR 44,1-3 maps to DICOM Requested Procedure Code Sequence (0032,1064) . OBR 44,2 maps to Requested Procedure Description (0032,1060)

2.3.2.7 ZDS Segment Mappings

VNA supports the IHE custom segment ZDS that conveys the study instance UID.

Table 2-35 ZDS Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
1	Study Instance UID	YES		
1.1	Reference Pointer	YES	Yes	DICOM Study Instance UID

2.3.3 Acknowledgements

If the HL7 message is processed successfully, then an ACK is returned with the Acknowledgement Code set to “AA”.

If the incoming message cannot be processed, the HL7 mapping returns a **NAK**. If the reason is that one of the required fields or segments in the message is missing, the Acknowledgment Code is set to “**AR**”. Any other parsing error returns an Acknowledgment Code of “**AE**”.

3 OUTBOUND MESSAGES

3.1 Core Server Platform (CSP)

3.1.1 Supported Trigger Events

3.1.1.1 Supported DFT Events

For more information about the processed segments and segment mappings, refer to the document specified in the 'Conformance profile document' column.

Table 3-1 Supported ORM Events

Func Area	Event Code	DFT Trigger Event Description	Conformance profile document
DFT	P03	Order message	ENTERPRISE IMAGING OUTBOUND DFT_P03.pdf

3.1.1.2 Supported ORM Events

For more information about the processed segments and segment mappings, refer to the document specified in the 'Conformance profile document' column.

Table 3-2 Supported ORM Events

Func Area	Event Code	ORM Trigger Event Description	Conformance profile document
ORM	O01	Order message	ENTERPRISE IMAGING OUTBOUND ORM_O01.pdf

Note for VNA centric deployment: CSP sends ORM messages to Rhapsody which forwards them to Connectivity Manager whenever the DICOM study related to the ORM is received and Verified in CSP or when a Quality Control task is performed by the user in Acquisition Desktop (study fix-up for example).

3.1.1.3 Supported ORU Events

For more information about the processed segments and segment mappings, refer to the document specified in the 'Conformance profile document' column.

Table 3-3 Supported ORU Events

Func Area	Event Code	ORU Trigger Event Description	Conformance profile document
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - ASCII ENCAPSULATED DATA {ORC-OBR}-OBX.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - ASCII ENCAPSULATED DATA {[ORC]-OBR-OBX}.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - ASCII ENCAPSULATED DATA-ORU_R01.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - ASCII LINE BY LINE {ORC-OBR}-OBX.pdf

Func Area	Event Code	ORU Trigger Event Description	Conformance profile document
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - ASCII LINE BY LINE {[ORC]-OBR-OBX}.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - ASCII LINE BY LINE.pdf
ORU	R01'*'	Unsolicited transmission of an observation Message	OUTBOUND ORU_R01 - ASCII NARRATIVE REPORTING {[ORC]-OBR-OBX}.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - ASCII NARRATIVE REPORTING {ORC-OBR}-OBX.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - ASCII NARRATIVE REPORTING.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - FORMATTED TEXT {[ORC]-OBR-OBX}.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - FORMATTED TEXT {ORC-OBR}-OBX.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - FORMATTED TEXT.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - REFERENCE POINTER {ORC-OBR}-OBX.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - REFERENCE POINTER {[ORC]-OBR-OBX}.pdf
ORU	R01	Unsolicited transmission of an observation Message	ENTERPRISE IMAGING OUTBOUND ORU_R01 - REFERENCE POINTER.pdf

Note for VNA centric deployment with ORU to DICOM SR conversion option: The event marked with an '*' is configured by default in CSP.

The user can create reports in the Acquisition Desktop. Those reports can be sent as "plain text" in an ORU message to Rhapsody which will forward them to the Connectivity Manager. Connectivity Manager will convert these Plain text reports in DICOM basic text SR to archive them in VNA.

3.2 Connectivity Manager (VNA centric deployment only)

The Connectivity Manager HL7 outbound interface is used for communication with internal Enterprise Imaging VNA only (through Rhapsody)

3.2.1 General Processing Rules

The default outbound mapping is generally the inverse of the HL7 inbound mapping. Several rules are followed:

1. In the inbound mappings, an MCF attribute may have a primary source field and a secondary source field, which is used if the primary is blank. In the outbound mappings, the MCF attribute only populates the original primary HL7 field and any secondary HL7 field is left blank.

2. In the inbound mappings, an HL7 field can be copied to several MCF attributes. In the outbound mappings, the comments list the order MCF attributes will be checked for a value for the HL7 field.

3. HL7 keeps date and time in one field, MCF uses two separate attributes. When HL7 date/time fields are constructed, the MCF values are right-zero-filled as needed.

Note especially that the HL7 outbound mappings do **not** assume the MCF message is complete. The real world device is configured, by default, to query the database for all possible fields. This functionality is configurable and can be disabled if not needed.

3.2.1.1 Segments Processed

The following table lists the segments that are processed for each HL7 message type within the default HL7 Out TCL scripts.

Note that in Enterprise Imaging 8.0.0 only ORM messages are sent out to VNA as part of the verification service

Table 3-4 HL7 Out Segments Processed

HL7 Message Type	Segments Produced
ADT	MSH PID PV1 [AL1]
ADT Merge messages add:	MRG
ORM	MSH PID PV1 [AL1] ORC OBR

By default, all HL7 data elements correspond to HL7 v2.3.1. Connectivity Manager supports HL7 2.4 messages as long as they are conform to what is documented in the HL7 conformance statement. However, Connectivity Manager does not use (or need) any new functionality that was introduced in HL7 v2.4.

3.2.2 Supported HL7 fields

3.2.2.1 MSH Segment

Table 3-5 MSH Message Header

MSH - Message Header					
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**MCF Attribute**	**Comments**
1	Field Separator	Yes			(1) Always "|"
2	Encoding Characters	Yes			(1) Always "^~\&"
3	Sending Application	No	configuration	sending_application	(2) device configuration
4	Sending Facility	No	configuration	sending_facilty	(2) device configuration
5	Receiving Application	No	configuration	receiving_application	(2) device configuration
6	Receiving Facility	No	configuration	receiving_faciity	(2) device configuration
7	Date/time of Message	No			Date/Time message sent
8	Security	No			
9	Message Type	Yes		message_type, message_type_details	(3) See comment below and Section 3.2.4.1
10	Message Control ID	Yes			(4) Generated number
11	Processing ID	Yes			(5) 'P'
12	Version ID	Yes			(5) '2.3.1'
13	Sequence Number	No			
14	Continuation Pointer	No			
15	Accept Acknowledgment Type	No			
16	Application Acknowledgment Type	No			
17	Country Code	No			
18	Character Set	No	configuration	character_encoding	Uses lookup table
19	Principal Language of Message	No			

(1) The field separator and encoding characters cannot be changed through script or grammar changes.

(2) These attributes come from the *configuration* object and can be set when the device is configured using the service tool.

(3) This field's value comes from a lookup that maps the *message_type* to the HL7 type and event code. If this lookup fails, no more mapping occurs and no HL7 message is generated. If the lookup succeeds, the result is potentially refined by another lookup using the *message_type_details* attribute. See section 3.4.1 for more details.

(4) The message control ID is a sequential number. When the device starts, the initial value of the control ID is set to the number of seconds since January 1, 1970.

(5) These two values are constants found in the mapping table used to generate the MSH segment and can be changed by editing the grammar.

3.2.2.2 PID Segment

Table 3-6 PID--Patient Identification

PID - Patient Identification						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute(s)**	**Comments**
1	Set ID - Patient ID	No				

PID - Patient Identification						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute(s)**	**Comments**
2	Patient ID (External ID)	No				Not used
3	Patient ID (Internal ID)	Yes	patient, patient_id_sequence	1	patient_id	use_of_patient_id= 'PRIMARY'
				4	issuer_of_patient_id	use_of_patient_id= 'PRIMARY'
4	Alternate Patient ID	No	patient, patient_id_sequence	1	patient_id	use_of_patient_id= 'ALTERNATE'
				4	issuer_of_patient_id	use_of_patient_id= 'ALTERNATE'
5	Patient Name	Yes	patient, patient_name_ sequence	0	patient_name	use_of_patient_name= 'PRIMARY'
6	Mother's Maiden Name	No				
7	Date of Birth	No	patient	0	patient_birth_date + patient_birth_time	Date, time; right-filled with 0's as needed.
8	Sex	No	patient	0	patient_sex	M (Male), F (Female), O (Other), U (Unknown)
9	Patient Alias	No	patient, patient_name_ sequence	0	patient_name	use_of_patient_name= 'ALTERNATE'
10	Race	No	patient	0	ethnic_group	
11	Patient Address	No	patient	0	patient_address	
12	County Code	No				
13	Phone Number -	No	patient, patient_contact_ sequence	1	contact	type_of_contact= 'HOME PHONE'
14	Phone Number - Business	No	patient, patient_contact_ sequence	1	contact	type_of_contact= 'WORK PHONE'
15	Primary Language	No				
16	Marital Status	No	patient	0	marital_status	A (Separated), D (Divorced), M (Married), S (Single), W (Widowed)
17	Religion	No	patient	0	patient_religious_ preference	
18	Patient Account Number	No	patient	0	patient_account_ number	
19	SSN Number - Patient	No				
20	Driver's Lic Num - Patient	No				
21	Mother's Identifier	No				
22	Ethnic Group	No				
23	Birth Place	No				
24	Multiple Birth Indicator	No				
25	Birth Order	No				

PID - Patient Identification						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute(s)**	**Comments**
26	Citizenship	No				
27	Veterans Military Status	No				
28	Nationality	No				
29	Patient Death Date/Time	No				
30	Patient Death Indicator	No				

3.2.2.3 PV1 Segment

Table 3-7 PV1 – Patient Visit

PV1 - Patient Visit						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute(s)**	**Comments**
1	Set ID - Patient Visit	No				
2	Patient Class	Yes	visit	0	patient_class	Required for ADTs, not ORMs. I (Inpatient), O (Outpatient), E (Emergency), P (Preadmit), R (Recurring), B (Obstetrics)
3	Assigned Patient Location	No	Visit	0	current_patient_location	
4	Admission Type	No				
5	Pre-admit Number	No				
6	Prior Patient Location	No				
7	Attending Doctor	No	visit, attending_physician_sequence, >person_id_sequence	1	person_id	use_of_person_id= ’PRIMARY’
				9	issuer_of_person_id	use_of_person_id= ’PRIMARY’
			visit, attending_physician_sequence	2-8	person_name	
8	Referring Doctor	No	visit, referring_physician_sequence, >person_id_sequence	1	person_id	use_of_person_id= ’PRIMARY’
				9	issuer_of_person_id	use_of_person_id= ’PRIMARY’
			visit, referring_physician_sequence	2-8	person_name	
9	Consulting Doctor	No	visit, consulting_physician_sequence >person_id_sequence	1	person_id	use_of_person_id= ’PRIMARY’
				9	issuer_of_person_id	use_of_person_id= ’PRIMARY’

PV1 - Patient Visit						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute(s)**	**Comments**
			visit, consulting_physician_sequence	2-8	person_name	
10	Hospital Service	No				
11	Temporary Location	No				
12	Pre-admit Test Indicator	No				
13	Readmission Indicator	No				
14	Admit Source	No				
15	Ambulatory Status	No	patient, patient_medical_module_ sequence	0	pregnancy_status	If and only if pregnancy_status is 3, set to B6.
16	VIP Indicator	No				
17	Admitting Doctor	No	visit, admitting_physician_sequence >person_id_sequence	1	person_id	use_of_person_id= 'PRIMARY'
				9	issuer_of_person_id	use_of_person_id= 'PRIMARY'
			visit, admitting_physician_sequence	2-8	person_name	
18	Patient Type	No				
19	Visit Number	No	visit	1	admission_id	
				4	issuer_of _admission_id	
20	Financial Class Eff. Date	No				
21	Charge Price Indicator	No				
22	Courtesy Code	No				
23	Credit Rating	No				
24	Contract Code	No				
25	Contract Effective Date	No				
26	Contract Amount	No				
27	Contract Period	No				
28	Interest Code	No				
29	Transfer to Bad Debt Code	No				
30	Transfer to Bad Debt Date	No				
31	Bad Debt Agency Code	No				
32	Bad Debt Transfer Amount	No				
33	Bad Debt Recovery Amt	No				
34	Delete Account Indicator	No				

PV1 - Patient Visit						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute(s)**	**Comments**
35	Delete Account Date	No				
36	Discharge Disposition	No				
37	Discharged to Location	No				
38	Diet Type	No				
39	Servicing Facility	No	visit	0	institution_name	
40	Bed Status	No				
41	Account Status	No				
42	Pending Location	No				
43	Prior Temporary Location	No				
44	Admit Date/Time	No	visit	0	admitting_date + admitting_time	Date, time right filled with 0's as needed.
45	Discharge Date/Time	No	visit	0	discharge_date + discharge_time	Date, time right filled with 0's as needed.
46	Current Patient Balance	No				
47	Total Charges	No				
48	Total Adjustments	No				
49	Total Payments	No				
50	Alternate Visit ID	No				
51	Visit Indicator	No				
52	Other Healthcare Provider	No				

3.2.2.4 MRG Segment

Table 3-8 MRG -- Merge Information

MRG - Merge Information						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
1	Prior Patient ID - Internal	Yes	referenced_merged_patient_sequence, >patient_id_sequence	1	patient_id	use_of_patient_id = 'PRIMARY'
				4	issuer_of_patient_id	
2	Prior Alternate Patient ID	No				
3	Prior Patient Acct Number	No				
4	Prior Patient ID - External	No				
5	Prior Visit Number	No				
6	Prior Alternate Visit ID	No				

MRG - Merge Information						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
7	Prior Patient Name	No				

This segment is only used in Merge messages (*message_type* = 'PATIENT_MERGED').

3.2.2.5 ORC Segment

Table 3-9 ORC - Common Order

ORC - Common Order						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
1	Order Control	Yes	placer order	0	order_status	Check first, see Section 3.2.4.2
			requested procedure	0	study_status_id	Check second, see Section 3.2.4.2
2	Placer Order #	Yes	placer order	1	placer_order_number	Contains the Accession number
				2	issuer_of_placer_order_number	
3	Filler Order #	Yes	imaging service request	1	accession_number	
				2	issuer_of_accession_number	
4	Placer Group #	No	placer order	1	placer_group_number	
				2	issuer_of_placer_group_number	
5	Order Status	No	placer order	0	order_status	Check first, see Section 3.2.4.2
			requested procedure	0	study_status_id	Check second, see Section 3.2.4.2
6	Response Flag	No				
7	Quantity/Timing	No	placer order	0	quantity_timing	
8	Parent	No	placer order	0	parent	
9	Date/Time of Transaction	No	placer order	0	transaction_date + transaction_time	Date, time right filled with 0's as needed.
10	Entered By	No	placer order	2-4	order_entered_by	
11	Verified By	No				
12	Ordering Provider	No	placer order, *ordering_provider_sequence, > person_id_sequence*	1	person_id	use_of_person_id = 'PRIMARY'
				9	issuer_of_person_id	use_of_person_id = 'PRIMARY'
			placer order ordering_provider_sequence	2-8	person_name	

ORC - Common Order						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
13	Enterer's Location	No	placer order	0	order_entering_location	
14	Call Back Phone Number	No	placer order	1	placer_call_back_phone_number	
15	Order Effective Date/Time	No	placer order	0	placer_order_effective_date + placer_order_effective_time	Date, time right filled with 0's as needed.
16	Order Control Reason	No				
17	Entering Organization	Yes	placer_order	0	entering_organization	Check first
			imaging service request	0	requesting_service	Check second
18	Entering Device	Yes		1	requesting_service	Contains the department code that will be used by VNA as Virtual AE (VAE) to identify from which department the study stored in VNA comes from
19	Action By	No				

3.2.2.6 OBR Segment

Table 3-10 OBR - Observation Request

OBR - Observation Request						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
1	Set ID - Observation Request	No		0		'1'
2	Placer Order #	Yes	placer order	1	placer_order_number	Contains the Accession number
				2	issuer_of_placer_order_number	
3	Filler Order #	Yes	imaging service request	1	accession_number	
				2	issuer_of_accession_number	
4	Universal Service ID	Yes	requested procedure, requested_procedure_code_sequence >referenced_requested_procedure_code_sequence	1	code_value	There are several sources for this field. This is the default in the grammar and should be changed as needed.
				2	code_meaning	
				3	coding_scheme_designator	
5	Priority	No				

OBR - Observation Request						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
6	Requested Date/Time	No				
7	Observation Date/Time	No				
8	Observation End Date/Time	No				
9	Collection Volume	No				
10	Collector Identifier	No				
11	Specimen Action Code	No				
12	Danger Code	No	patient, patient_medical_module_ sequence	0	patient_state	
13	Relevant Clinical Inf.	No	imaging service request	0	service_request_comments	
14	Specimen Rec'd Date/Time	No				
15	Specimen Source	No				
16	Ordering Provider family	No	imaging service request, requesting_physician_ sequence >person_id_sequence	1	person_id	use_of_person_id = 'PRIMARY'
				9	issuer_of_person_id	use_of_person_id = 'PRIMARY'
			imaging service request, requesting_physician_ sequence	2-8	person_name	
17	Order Callback Phone No.	No				
18	Placer Field 1	Yes		1	accession_number	
19	Placer Field 2	No				
20	Filler Field 1	No				
21	Filler Field 2	No				
22	Result Rpt/Status Change - Date/Time	No			study_date + study_time OR transcription_date + transcription_time	
23	Charge To Practice	No				
24	Diagnostic Serv Sect Id	No	scheduled procedure step >scheduled_resource_ sequence	0	resource_name	
25	Result Status	No				
26	Parent Result	No				

OBR - Observation Request						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
27	Quantity/Timing	No	placer order	0	quantity_timing	The HIS-In mapping maps many MCF attributes from Field 27. quantity_timing is the one mapping that is mapped as the entire field so it is chosen as the default.
28	Result Copies To	No				
29	Parent Number	No				
30	Transportation Mode	No	requested procedure		patient_transport_ arrangements	
31	Reason For Study	No	placer order	0	reason_for_study	Check first
			requested procedure	0	reason_for_requested_ procedure	Check second
			imaging service request	0	reason_for_imaging_ service_request	Check third
32	Principal Result Interpreter	No	report_data_sequence >referenced_results_sequence >> interpretation_author_sequence obr(32,2) person_name report_data_sequence >referenced_results_sequence >> interpretation_approver_sequence obr(32,2) person_name report_data_sequence >referenced_results_sequence >> interpretation_author_sequence >>> person_id_sequence obr(32,1) person_id report_data_sequence >referenced_results_sequence >> interpretation_approver_sequence			

OBR - Observation Request						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
			>>> person_id_sequence obr(32,1) person_id			
33	Assistant Result Interpreter	No	report_data_sequence >referenced_results_sequence >> alternate_interpretation_author_sequence, alternate_interpretation_approver_sequence >>> person_id_sequence	1	person_id	
			report_data_sequence >referenced_results_sequence >> alternate_interpretation_author_sequence, alternate_interpretation_approver_sequence	2	person_name	
34	Technician	No	scheduled procedure step, scheduled_performing_physician_sequence >person_id_sequence	1	person_id	use_of_person_id = 'PRIMARY'
				9	issuer_of_person_id	use_of_person_id = 'PRIMARY'
			scheduled procedure step, scheduled_performing_physician_sequence	2-8	person_name	
35	Transcriptionist	No	report_data_sequence >referenced_results_sequence >> interpretation_transcriber_sequence	1	person_name	
36	Scheduled Date/Time	No	scheduled procedure step	0	scheduled_procedure_step_start_date + scheduled_procedure_step_start_time	Date, time right filled with 0's as needed.
37	Number of Sample Containers	No				
38	Transport Logistics of Collected Sample	No				
39	Collector's Comment	No				
40	Transport Arrangement Responsibility	No				
41	Transport Arranged	No				
42	Escort Required	No				

OBR - Observation Request						
Seq	**HL7 Field Name**	**Value Required**	**MCF Object**	**HL7 Comp**	**MCF Attribute**	**Comments**
43	Planned Patient Transport Comment	No				

3.2.2.7 ZDS Segment

Connectivity Manager supports the ZDS segment as defined by IHE Radiology Technical Framework Rev 13.0

Table 3-11 ZDS Attribute Generated by Connectivity Manager

Seq	HL7 Field Name	MCF Attribute	Comments
1	Study instance UID		
1.1	Reference Pointer	Study_instance_uid	DICOM Study Instance UID (0020,000D)

3.2.3 Message Types

3.2.3.1 HL7 Message Type, Event Mappings

The following table lists all of the MCF messages for patient, visit, order, and study events and their default mappings to HL7.

In Enterprise Imaging 8.0.0 the Event STUDY_UPDATED is enabled, so that when CM receives an ORM with ORC-1= SC and ORC-5 is not CM,IP,DC, PA or CA, it sends out an ORM O01 message to VNA.

Table 3-12 Outbound Message Types

Outbound Message Types	
MCF message_type	**HL7 Mapping**
PATIENT_CREATED	ADT^A05
PATIENT_DELETED	ADT^A23
PATIENT_UPDATED	ADT^A08
PATIENT_MERGED	ADT^A18
VISIT_CREATED	ADT^A11
VISIT_SCHEDULED	
PATIENT_ADMITTED	ADT^A01
PATIENT_TRANSFERRED	ADT^A02
PATIENT_DISCHARGED	ADT^A03
VISIT_DELETED	ADT^A38
VISIT_UPDATED	ADT^A33
ORDER_CREATED	ORM^O01
ORDER_FILLED	
ORDER_CANCELLED	ORM^O01

Outbound Message Types	
MCF message_type	**HL7 Mapping**
ORDER_DELETED	
ORDER_UPDATED	ORM^O01
STUDY_CREATED	ORM^O01
STUDY_SCHEDULED	ORM^O01
STUDY_CANCELLED	ORM^O01
PATIENT_ARRIVED	
STUDY_STARTED	ORM^O01
STUDY_COMPLETED	ORM^O01
STUDY_VERIFIED	
STUDY_READ	
STUDY_DELETED	
STUDY_UPDATED	ORM^O01
REPORT_CREATED	ORU^R01
PROCEDURE_MF_RECEIVED	MFN^M01

The default mappings are the inverse of the HIS-In HL7 to MCF mappings. However because the HIS-In devices map some of the HL7 mappings to a single MCF message type, the most common mapping is chosen for the default lookup table. For example, the HIS-In maps A08, A28, and A31 to PATIENT_UPDATED. This table maps PATIENT_UPDATED to A08, the most commonly used ADT code of the three.

The other codes (A28, A31) may be mapped by using the message_type_detail attribute and the second lookup table. In this lookup table, each of the defined 51 ADT codes defined by the HL7 2.3 specification has a mapping. See Appendix A of the Common Message Model specification.

By appropriate settings in these lookup tables, any desired MCF to HL7 mappings can be made. The first table maps MCF message_type to HL7 mapping (MSH-9). If this lookup defines no HL7 value, the MCF message is ignored and no HL7 message is generated. If this lookup succeeds, the returned HL7 value can be overridden if the lookup using the message_type_detail succeeds.

There are typically three types of devices. In the first case, the site wants all demographic data received passed on to the external HL7system. The site would set the ORM^O01 values to null strings and maybe some of the unneeded ADT codes such as PATIENT_TRANSFERRED and PATIENT_DISCHARGED.

In the second case, the external HL7system system wants ADT information but only for scheduled procedures. In the case the site would set all of the ADT mappings to null strings and change the ORM^O01 mappings to appropriate ADT codes.

In the last case, study messages are passed as orders. The ADT information may or may not be useful. The next section shows how the order control code is mapped.

3.2.3.2 Order Mappings

For order messages, a lookup of the order control and order status values is attempted based on performed_procedure_step_status, study_status_id, and message_type in that order. The first lookup that produces a non-empty string is used for the ORC(1,1) or ORC(5,1) value. If none of these lookups results in a non-empty string, no HL7 message is generated.

Performed Procedure Step Status	ORC 1	ORC 5
IN PROGRESS	SC	IP
COMPLETED	SC	CM
VERIFIED	SC	CM
READ	SC	CM

Study Status ID	ORC 1	ORC 5
CREATED	NW	
SCHEDULED	NW	
SCHEDULED	XO	
CANCELLED	CA	CA
COMPLETED	SC	CM
STARTED	SC	IP
VERIFIED	SC	CM
READ	SC	CM

Message Type	ORC 1	ORC 5
STUDY_CREATED	NW	
STUDY_SCHEDULED	NW	
PATIENT_ARRIVED		
STUDY_STARTED	SC	IP
STUDY_COMPLETED	SC	CM
STUDY_VERIFIED	SC	CM
STUDY_READ	SC	CM
STUDY_DELETED		
STUDY_UPDATED	SC	
STUDY_CANCELLED	CA	CA

3.3 VNA (VNA centric deployment only)

3.3.1 Forwarding of HL7 Messages

VNA can be configured to forward any received HL7 messages to one or more destinations. By default, the message will be forwarded ‘as is’, including retaining the Sending Application and Facility and Receiving Application and Facility in MSH segment. Optionally, a mapping can be applied when forwarding a message.

3.3.2 Outbound HL7 Notifications

VNA can be configured to trigger HL7 notifications to one or more destinations. The HL7 notifications are generated based on a configurable mapping.

The HL7 Verification notification message is only for internal Enterprise Imaging communication to Rhapsody which will forward it to Connectivity Manager.

3.3.2.1 Study Available / Unavailable HL7 Notification

The following segments are generated when VNA sends a study available HL7 notification or study unavailable HL7 notification:

MSH
PID
ORC
OBR
OBX
ZDS

The following segments are generated when VNA sends a Verification Notification message to Connectivity Manager via Rhapsody (internal Enterprise Imaging communication only):

MSH
PID
ORC
ZDS

The following sections define the default mapping of the HL7 notification.

3.3.2.2 MSH Segment Mappings

Table 3-13 MSH Attribute Generated by VNA

Seq	HL7 Field Name	Regular Study Available Notification	To connectivity manager (verification message)
1	Field Separator	"|"	"|"
2	Encoding Characters	"^~\&"	"^~\&"
3	Sending Application	Configurable Sending Application	
4	Sending Facility	Configurable Sending Facility	
5	Receiving Application	Receiving Application	“IV”
6	Receiving Facility	Receiving Facility	“IV”
7	Date/time of Message	Date/Time of generated message. It has the format of YYYYMMDDHHmmSS.nnn	
8	Security		
9	Message Type	“ORM^O01”	“ORM^O01”
10	Message Control ID	Generated by VNA	
11	Processing ID	“P”	“P”
12	Version ID	“2.5”	“2.5”
13	Sequence Number		
14	Continuation Pointer		
15	Accept Acknowledgement Type		
16	Application Acknowledgement Type		
17	Country Code		
18	Character Set	“8859/1”	“8859/1”
19	Principal Language of Message		

3.3.2.3 PID Segment Mappings

Table 3-14 PID Attribute Generated by VNA

Seq	HL7 Field Name	Regular Study Available Notification	To connectivity manager (verification message)
1	Set ID – Patient ID		
2	Patient ID (External ID)	EMPI if known in Other Patient IDs Sequence (0010,1002)	
3	Patient ID (Internal ID)	PID(3,1) = Patient ID (0010,0020) PID(3,4) = Issuer of Patient ID (0010,0021)	PID(3,1) = Patient ID (0010,0020) PID(3,4) = Issuer of Patient ID (0010,0021)
4	Alternate Patient ID		
5	Patient Name	Maps from DICOM Patient Name (0010,0010)	Maps from DICOM Patient Name (0010,0010)
6	Mother's Maiden Name		
7	Date of Birth	Maps from DICOM Patient's Birth Date (0010,0030)	Maps from DICOM Patient's Birth Date (0010,0030)
8	Sex	Maps from DICOM Patient's Sex (0010,0040)	Maps from DICOM Patient's Sex (0010,0040)
9	Patient Alias		
10	Race		
11	Patient Address		
12	Country Code		
13	Phone Number – Home		
14	Phone Number – Business		
15	Primary Language		
16	Marital Status		
17	Religion		
18	Patient Account Number		
19	SSN Number – Patient		
20	Driver's Lic Num – Patient		
21	Mother's Identifier		
22	Ethnic Group		
23	Birth Place		
24	Multiple Birth Indicator		
25	Birth Order		
26	Citizenship		
27	Veterans Military Status		
28	Nationality		
29	Patient Death Date/Time		
30	Patient Death Indicator		

3.3.2.4 ORC Segment Mappings

Table 3-15 ORC Attribute Generated by VNA

Seq	HL7 Field Name	Regular Study Available Notification	To connectivity manager (verification message)
1	Order Control	"SC"	"SC"
2	Placer Order #		Maps from DICOM Accession Number (0008,0050)

Seq	HL7 Field Name	Regular Study Available Notification	To connectivity manager (verification message)
3	Filler Order #	Maps from DICOM Accession Number (0008,0050)	
4	Placer Group #		
5	Order Status	"IO" - if the message is Study Available "IA" - if the message is Study Unavailable	"IO" - if the message is Study Available "IA" - if the message is Study Unavailable Note: "IA" messages are filtered out in Rhapsody, so they do not reach the connectivity Manager

3.3.2.5 OBR Segment Mappings

This segment is not sent in the ORM verification messages to Rhapsody → Connectivity Manager

Table 3-16 OBR Attribute Generated by VNA

Seq	HL7 Field Name	Comments
1	Set ID - Observation Request	"1"
2	Placer Order #	
3	Filler Order #	Maps from DICOM Accession Number (0008,0050)
4	Universal Service ID	Maps from DICOM Accession Number (0008,0050)
5	Priority	
6	Requested Date/Time	
7	Observation Date/Time	Concatenation of DICOM Study Date (0008,0020) and Study Time (0008,0030)
8	Observation End Date/Time	
9	Collection Volume	
10	Collector Identifier	
11	Specimen Action Code	
12	Danger Code	
13	Relevant Clinical Inf.	
14	Specimen Rec'd Date/Time	
15	Specimen Source	
16	Ordering Provider family	
17	Order Callback Phone No.	
18	Placer Field 1	Number of Study Related Series – Only available if the message is Study Available
19	Placer Field 2	Number of Study Related Instances – Only available if the message is Study Available
20	Filler Field 1	
21	Filler Field 2	
22	Result Rpt/Status Change - Date/Time	
23	Charge To Practice	

Seq	HL7 Field Name	Comments
24	Diagnostic Serv Sect Id	Modalities in Study – Only available if the message is Study Available
25	Result Status	“F”

3.3.2.6 OBX Segment Mappings

Table 3-17 OBX Attribute Generated by VNA

Seq	HL7 Field Name	Comments
1	Set ID – OBX	
2	Value Type	“CE”
3	Observation Identifier	“IMG”
4	Observation Sub-ID	
5	Observation Value	OBX(5,1): - “Online” If the message is Study Available - “Archived” if the message is Study Unavailable OBX(5,2) specifies a URL that can view the study from VNA. (URL launching XERO Viewer for example)
6	Units	
7	References Range	
8	Abnormal Flags	
9	Probability	
10	Nature of Abnormal Test	
11	Observe Result Status	“A” – if the message is Study Available “D” – If the message is Study Unavailable

3.3.2.7 ZDS Segment Mappings

VNA supports the ZDS segment as defined by IHE Radiology Technical Framework Rev 13.0.

Table 3-18 ZDS Attribute Generated by VNA

Seq	HL7 Field Name	Comments
1	Study Instance UID	
1.1	Reference Pointer	Maps from DICOM Study Instance UID (0020,000D)
1.2	Application ID	
1.3	Type of Data	“Application”
1.4	Subtype	“Dicom”

4 QUERIES

4.1 VNA (VNA centric deployment only)

4.1.1 Query

VNA can issue a query to fetch linked patients using HL7 QBP^Q23 message.

4.1.1.1 Query–MSH Segment

VNA creates the MSH segment as follows:

Table 4-1 MSH Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
1	Field Separator	Yes	No	"|"
2	Encoding Characters	Yes	No	"^~\&"
3	Sending Application	Yes	No	
4	Sending Facility	Yes	No	
5	Receiving Application	Yes	No	Configured PIX Manager Application
6	Receiving Facility	Yes	No	Configured PIX Manager Facility
7	Date/time of Message	No	No	Current timestamp
8	Security	No	No	
9	Message Type	Yes	No	QBP^Q23
10	Message Control ID	Yes	No	Q23
11	Processing ID	Yes	No	
12	Version ID	Yes	No	“2.5”
13	Sequence Number	No	No	
14	Continuation Pointer	No	No	
15	Accept Acknowledgement Type	No	No	
16	Application Acknowledgement Type	No	No	
17	Country Code	No	No	
18	Character Set	Yes	No	ISO_IR 100
19	Principal Language of Message	No	No	

4.1.1.2 Query–QPD Segment

The following table describes how VNA creates the QPD segment of the query message.

Table 4-2 QPD Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping from IDC Attribute(s) (Yes/No)	Comments
1	Message Query Name	Yes	Yes	IHE PIX Query
2	Query Tag	Yes	No	Set to 1,2,3,…
3	User Parameters	Yes	No	PatientID^^^IssuerOfPatientID

Seq	HL7 Field Name	Value Required	Default Mapping from IDC Attribute(s) (Yes/No)	Comments
4	User Parameters	No	No	^^^Domain1[~^^^Domain2]* i.e. a number of domain filters

4.1.1.3 Query–RCP Segment

The following table describes how VNA creates the QPD segment of the query message.

Table 4-3 QPD Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping from IDC Attribute(s) (Yes/No)	Comments
1	Query Priority	Yes	No	The value 'I' for immediate response
2	Quantity Limited Request	No	No	
3	Response Modality	No	No	
4	Execution and Delivery Time	No	No	
5	Modify Indicator	No	No	
6	Sort-by Field	No	No	
7	Segment group inclusion	No	No	

4.1.2 Response to Query

VNA maps the query results into internal attributes as described in the following tables. Fields that are not used have been omitted.

4.1.2.1 Response to Query—MSH Segment

Table 4-4 Response to Query--MSH Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
9	Message Type	Yes	No	RSP^K23

4.1.2.2 Response to Query—PID Segment

Table 4-5 Response to Query--PID Attribute Support in VNA

Seq	HL7 Field Name	Value Required	Default Mapping to VNA Attribute(s) (Yes/No)	Comments
3	Patient ID (Internal ID)	Yes	No	List of linked patient IDs. It may contain multiple values.

4.2 CWP

4.2.1 Query

CWP translates user based patient-level queries into HL7 PDQ messages.

CWP uses the HL7 PIX services to combine patients together as well as to allow querying for longitudinal records against external non-HL7 systems which require specific patient identities.

CWP can use v2.1 through 2.6 queries, but defaults to v2.5 and will accept the related responses, as well as v3 SOAP based queries.

4.2.2 Supported Query events

For more information about the processed segments and segment mappings, refer to the document specified in the Conformance profile document column.

Table 6 Supported Query Events

Func Area	Event Code	QRY Trigger Event	Conformance profile document[1]
QBP	Q23	Query for associated patient identities	XERO PIX Query XERO PIX Query Response
QBP	Q22	Query for patient demographics	XERO PDQ Query XERO PDQ Query Response

[1] See www.agfahealthcare.com/hl7 for external copies of these documents.